



OSAT Newsletter

Glenn Research Center

Issue 4

October - December 1999

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CALENDAR OF EVENTS

What: PBS, Public Open House

Date: October 30, 1999

Time: 10 a.m. - 5 p.m.

Place: Plum Brook Station

What: Security Management Office Forum

Date: November 17, 1999

Time: 9 - 10:00 am

Place: Ad Building Auditorium

Office of Safety and Assurance Technologies

Getting to Know Tim Polich-Why is he at NASA and where did he come from?



Tim is the Project Manager for the Decommissioning the two nuclear reactors at Plum Brook Station. Contrary to some early rumors he is not going to shutdown or decommission Plum Brook. He is in charge of terminating the two Nuclear Regulatory Commission licenses that NASA has for the Plum Brook Reactor Facility.

The process starts with submitting a Decommissioning Plan, getting it approved, cleaning up the Reactor Facility by decontamination and removal of contamination to radiation levels below regulatory limits for unrestricted use. Leveling the reactor buildings, having the regulators confirm NASA's final status survey that shows the work was done, and obtaining a letter that states the license is terminated

The United States Nuclear Regulatory Commission (NRC) employed Tim. The last 15 + years he worked as a resident reactor inspector at three different commercial nuclear power plants, an Operations Engineer at NRC headquarters in Rockville, MD and most recently at NRC HQ as a licensing Project Manager for the Comanche Peak reactor site near Glen Rose.

Before working for the NRC Tim received bachelors and masters degrees in Nuclear Engineering from the University of Illinois and worked two summers at the Mare Island Naval Shipyard in Vallejo, California.

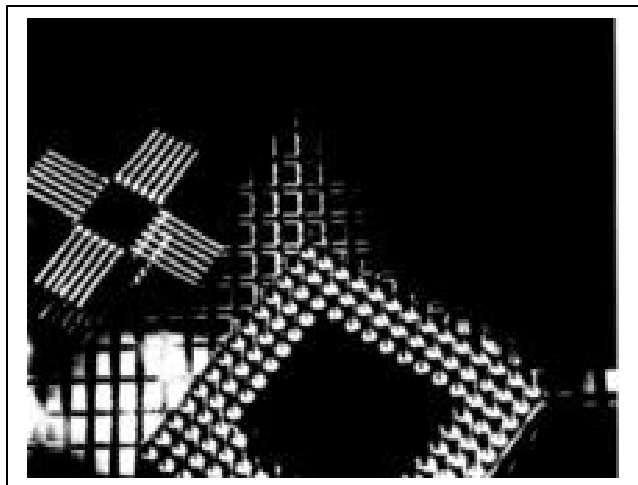
He spent 6 years in the Navy as a Reactor Operator and Engineering Watch Supervisor aboard submarines. He served short stints on a diesel submarine (USS Barbel (SS-580)) and two surface ships (USS Passumpsic (AO-107) and USS Bainbridge (DLGN-25)) before being assigned to the two nuclear submarines as a Reactor Operator (USS Abraham Lincoln (SSBN-602), and USS Puffer (SSN-652)).

He is a Naval Research Engineer Officer and recently became the Commanding Officer of a 27-person unit that supports the Commander Naval Surface Force Atlantic and drills in Pittsburgh with the Pennsylvania Air National Guard.

Tim is active in the American Nuclear Society and has been on the Executive Committee of the Operations and Power Division for 5 years. He has served on several committees including Nuclear Engineering Education for the Disadvantaged which provides scholarships based on financial need for students majoring in Nuclear Science and Engineering and provides motivational grants for science education for economically disadvantaged or minority students at all levels. This spring he will be on the ballot for the ANS Board of Directors.

Risk Management Office

Microsystems for Harsh Environment and Safety Applications



By now you have probably read or heard about an emerging microfabrication technology that has great potential to change the way we gather information from our environment, process this information, and then direct actuators to manipulate the environment for a specific desired purpose. Welcome to the world of microsystems; miniaturized systems manufactured in the United States, these microsystems are an integration of mechanical elements, sensors, actuators, and electronics. MEMS technology makes heavy use of microfabrication processes originally developed for the silicon-based integrated circuit industry. These processes are combined with additional mechanical processes like wafer bonding, micromolding, and bulk and surface micromachining to create microsystems capable of enabling products with reduced costs, greater accuracy, faster system response, increased efficiency, and higher performance.

Over the past 5 years, many lives have been saved by a microsensor no bigger than the diameter of a human hair (100 micrometers). This microsensor is a key element in the microaccelerometer system that deploys the airbag during a serious automotive collision. This MEMS device has greatly lowered the overall cost of airbag systems and vastly improved system performance.

Building upon the long history of successful sensor and instrumentation development, NASA GRC is leading an effort to develop MEMS technology for applications in harsh environments, such as high temperatures, stress, vibration, and corrosive media. The human body is also a harsh environment from a MEMS device point-of-view. For many of these applications, especially those involving high temperature, the typical silicon-based MEMS devices can not operate. Through a unique partnership between NASA, universities, and industry, the Glenn Microsystems Initiative was created to foster close collaboration and delivery of microsystem technology to a wide range of manufacturing and high-tech companies.

MEMS devices that can survive and operate in harsh environments have many applications. For example, three areas of particular interest are monitoring for propellant leaks, emission monitoring, and fire detection. To meet these applications, NASA GRC researchers are developing MEMS-based chemical gas sensors. Originally, the program pursued hydrogen sensors for propellant leak detection from launch vehicles. Because of the success and promise of this technology, the scope of the program has expanded to include sensor strategies for other gases, including hydrocarbons (C_xH_y), nitrogen oxides (NO_x), carbon monoxide (CO), carbon dioxide (CO_2), and Oxygen (O_2).

As NASA GRC continues to develop this emerging technology, researchers collaborate closely with vendors and industrial users to ensure a smooth transfer from laboratory, to supplier, to user. Although MEMS devices may be small, they can have a huge impact on the products into which they are incorporated.

Quality Management Office

QUALITY AND SAFETY ACHIEVEMENT RECOGNITION (QASAR) AWARD

This month we will conclude our review of the QASAR award system with a discussion of the Best of the Best award selection presented at the April Annual NASA Continual Improvement and Reinvention Conference.

NOMINATIONS

Any NASA or NASA contractor employee may nominate an eligible individual to receive a QASAR Award. The award nomination should be no more than one page in length. The QASAR form is available at GRC at <http://www-osat.lerc.nasa.gov/QASARform.doc>. (Mr. David Ross (3-6546) in the Quality Management Office is also available to help.)

NOMINATION JUSTIFICATION

Nominations should indicate how the individual impacted the Agency or mission he or she was supporting, and should, if appropriate, include metrics that support the achievement, for example:

- Specific examples of improved safety
- Specific examples of improved quality/or improved reliability
- Demonstrated cost savings
- Improved time management
- How the product or service was improved
- How productivity was increased
- Scope and duration of benefit
- Level of customer satisfaction

QASAR Award “BEST OF THE BEST”

Each year the “Best of the Best” of that year’s local QASAR Award recipients are selected for Agency recognition. Each Center and Headquarters may submit one nomination in each category for consideration in the “Best of the Best”. Nominations from the Centers must be signed by the Center Director, and the nominating Associate Administrator must sign nominations from the Strategic Enterprises and Headquarters Functional/Staff Offices. The QASAR Award Board will select one recipient in each category.

The QASAR “Best of the Best” Award plaques will be presented by the NASA Administrator at the Annual NASA Continual Improvement and Reinvention Conference held in April. The award comes with a check for \$10,000.

QASAR AWARD BOARD

The Deputy Associate Administrator for Safety and Mission Assurance chairs the QASAR Award Board. It consists of representatives from Headquarters and each Center. It convenes annually to select the QASAR Award “Best of the Best” recipients.

THE GLENN RESEARCH CENTER PROCESS

Each of the four categories (GRC - Safety; GRC - Non-Safety; Federal Non-NASA; Contractor) is carefully reviewed for the most significant contribution at the GRC level by the Quality Management Office. The Quality Management Office then discusses their selections with the Director of OSAT who presents the final GRC slate to the Center Director for approval.

Glenn Safety Office

The Do's and Don'ts of Portable Heater Safety

On a December morning in Cleveland, Ron and Mary noticed frost on their bedroom window. The weather report called for blistering wind chills. Their bedroom was dark, except for the orange glow of a portable electric heater. "Out there it may be 35 below, but in here it feels like summer," Ron says. "I just love it when we leave the heater at the foot of the bed all night. Then it's nice and toasty when we wake up," Mary replies. As he gets up to take a shower, Ron takes the heater with him. "I won't even unplug it because the extension cord reaches into the bathroom".

This scenario may seem cozy, but Ron and Mary's lack of safety knowledge or know how could injure or even kill them.

Here is how this well-meaning couple is endangering their lives:

They placed the heater too close to flammable bedding, left the heater on all night, unattended, and placed the heater in a spot where it could tip forward onto the bed.

They plugged the heater into an extension cord - probably one that's too small to handle the current required by a 1200 or 1500 watt heater.

Ron transported the heater into another room without unplugging it. Ron plans to use the heater in the bathroom while he runs water, risking electrocution.

Ron and Mary's story is untrue, but it echoes a real life situation. In March 1990, the U.S. Consumer Product Safety Commission warned people not to use portable electric heaters near a source of water, such as bathrooms. Several incidents prompted that warning. In one, parents let their children, age 2 and 4, take a bath with a heater placed on the edge of the tub. The children pulled the heater into the water and were electrocuted. According to the CPSC, heaters cause about 120,000 residential fires annually- nearly 22 percent of all residential fires and according to the National Electronic Injury Surveillance System, heating stoves and space heater injured 30,227 Americans during 1994.

Four "R's" Can Promote Safety

To reduce injury, keep in mind the "Four R's" suggested by the National Electrical Safety Foundation: Read, Respect, Relocate, and Replace.

Read about the product - Do some reading before you buy a portable heater, and determine what features best fit your needs.

Inspect the appliance for a seal from a reputable testing organization, such as, Underwriters Laboratories. Also, read over the list of safety features, any publications that rate products on safety, and the product's operating instructions.

Respect the power of electricity - Before you use an electric appliance, brush up on the basics of electrical safety with this list of do's and don'ts: Plug the heater into properly installed outlets.

Don't use outlets with loose-fitting receptacles that can overheat and cause a fire.

Fit plugs securely into outlets. Don't force a plug into an outlet that doesn't fit (you'll increase the risk of shock or fire). If you use an extension cord, make sure it's heavy enough. Look for a cord marked #14 or #12 American Wire Gauge (AWG). Only use electrical appliances for their intended use. Don't use a portable heater to dry clothes or defrost pipes.

Relocate your heater safely - Location is key when operating a portable heater. Before turning on your heater, notice what's nearby.

Don't place heaters within 3 ft. of bedding, towels, upholstered furniture, drapes or other combustible materials. Leave your heater on the floor.

Don't place it on a chair, kitchen counter, table, or elevated surface. Only use heaters in dry places.

Don't place your heater in a bathroom where it could contact water.

Never reach into water to retrieve an electrical appliance -even one that's off.

Stay at least 3 ft. away from the heater.

Don't let children operate a portable heater or play in front of it.

Replace your heater when it's no longer safe - Regularly inspect your heater for signs of wear and tear.

Don't use an appliance with a cut or frayed cord.

Replace your heater if you have doubts about its ability to perform safely.

Don't fix a portable heater unless you have the necessary skills. See your heater's operating instructions for maintenance guidelines.

The most important safety tip is perhaps the most overlooked. Read and follow the operating instruction to ensure you get long and safe use out of your heater.

Environmental Management Office

Improving Indoor Air Quality in your Office

The Environmental Management Office's, Industrial Hygiene Team responds to approximately three indoor air quality concerns at Glenn Research Center per week. The indoor environment in any building is the result of the interaction between site location, temperature, moisture, furnishings, building mechanical systems, contaminant sources, activities in the building, and building occupants. Common examples of indoor air quality concerns include sewer gas odors, combustion exhaust odors, odors associated with construction work, carbon monoxide infiltration, and mildew odors. Many of the indoor air concerns do not represent unsafe or uninhabitable situations; however, they may be uncomfortable or annoying. Although there are many reasons for indoor air quality problems, this article will focus on how to improve general indoor air quality in office areas.

To assure proper ventilation and air distribution in office areas, it is very important that the air vents or grilles on the exhaust or return side of heating, ventilation, and air conditioning (HVAC) units are kept clear and are not blocked. The Institutional Operations and Management Branch conduct preventive maintenance on all HVAC units on a routine basis (about twice per year.) HVAC units usually circulate some percentage of outside and inside air to ventilate a space. The circulated air is often temperature controlled. Proper preventive maintenance on HVAC units may require a filter change and inspection of the unit. In order to conduct preventive maintenance, HVAC units must be made accessible. Quite often, the institutional operations group cannot access HVAC units due to blockage with office furniture and computer equipment. If the area in front of an HVAC access panel is not kept clear, then the HVAC unit may not be accessible and will not be properly maintained. The institutional operations group posts signs in buildings when they intend to do preventive maintenance activities in buildings. It is important that people having offices with HVAC units make arrangements for units to be accessible and offices unlocked during the maintenance activities. The Institutional Operations and Management Branch makes every attempt to keep all HVAC systems operating properly. However, if there appears to be a concern or problem with a HVAC unit, please contact the Work Control Office at 3-3101.

Executive Order 13058 prohibits the smoking of tobacco products in all interior spaces and in any outdoor areas in front of building air intakes. Smoking near entrance doors may also contribute to indoor air quality problems since the contaminated outdoor air can be drawn into the building when opening and closing doors.

Studies have shown that office plants offer intrinsic value and may contribute to cleaning indoor air. Unfortunately, office plants may also present negative issues related to indoor air quality. The physical location where plants are located in an office may result in indoor air quality problems. In some offices the HVAC units are used as a windowsill for plants which should not cause a problem as long as plants are not on or near the blower vents. Organic material could fall into the blower and decay inside of the unit causing microbial growth and odors from plant decay. Another issue is related to watering and maintaining plants. Clean up all water spills promptly and do not over water plants. Water creates a hospitable environment for the growth of microorganisms such as molds or fungi, which may cause health problems when they become airborne.

Trashcans containing food or other organic materials should be emptied promptly to prevent odors and biological contamination. Food must be stored properly. Food attracts pests and certain foods may spoil thereby causing unpleasant odors and contamination. Never store perishable or odorous food products in your desk or office space.

Another common indoor air pollutant is animal dander. Avoid bringing animal dander or other potentially irritating biological materials or products from home. A lint brush or masking tape can be used to remove dander from clothing before coming to work.

Open windows may also be a source of indoor air quality problems. In the summer, opening a window may effect the humidity levels in the building, which may cause discomfort and may lead to other problems (i.e. mildew). An open window in one office may impact other offices and consequently other people. Opening a window in one room with a thermostat will affect the other rooms controlled by the same thermostat. When a window is open the air from outside is drawn into the building. This could become a problem when the outdoor air is contaminated with emissions from nearby sources such as vehicle exhaust, pesticides, or industrial pollutants. Natural sources such as pollen, dust, or fungal spores may also impact the indoor air quality.

The Glenn Research Center Indoor Air Quality Program may be found on the Environmental Programs Manual web page, Chapter 37, <http://www-osat.grc.nasa.gov/epm/Epm37.htm> For more information, please contact Ingrid Wagner at 3-6683.

Security Management Office

Enforcing Traffic Rules

Traffic enforcement is an integral part of the GRC Safety program with the objective to reduce traffic accidents and injuries, and to expedite the safe flow of vehicle and pedestrian traffic. Good traffic management programs depend upon the voluntary cooperation of the area population. In our case this is Center employees, both civil servants and contractors.

As in most enforcement programs, not everyone complies. Therefore, the enforcement of the Center's traffic regulations are receiving more attention with increased emphasis on speeding and illegal parking, two of the major contributing factors to traffic accidents. Notices are issued on violators of traffic regulations.

The processing of traffic violation notices is as per existing GRC policy. Traffic violation notices are forwarded to respective supervisors for appropriate action. Included in the Letter of Notification is a point assessment program similar to the State of Ohio's Revised Vehicle Code.

Supervisor involvement is an important part of educating our employees to the seriousness of our safety concerns. Details of the traffic management plan can be found in Chapter 19 of the GRC Safety Manual, located at the following web site <http://www-osat.lerc.nasa.gov/lsm/>.